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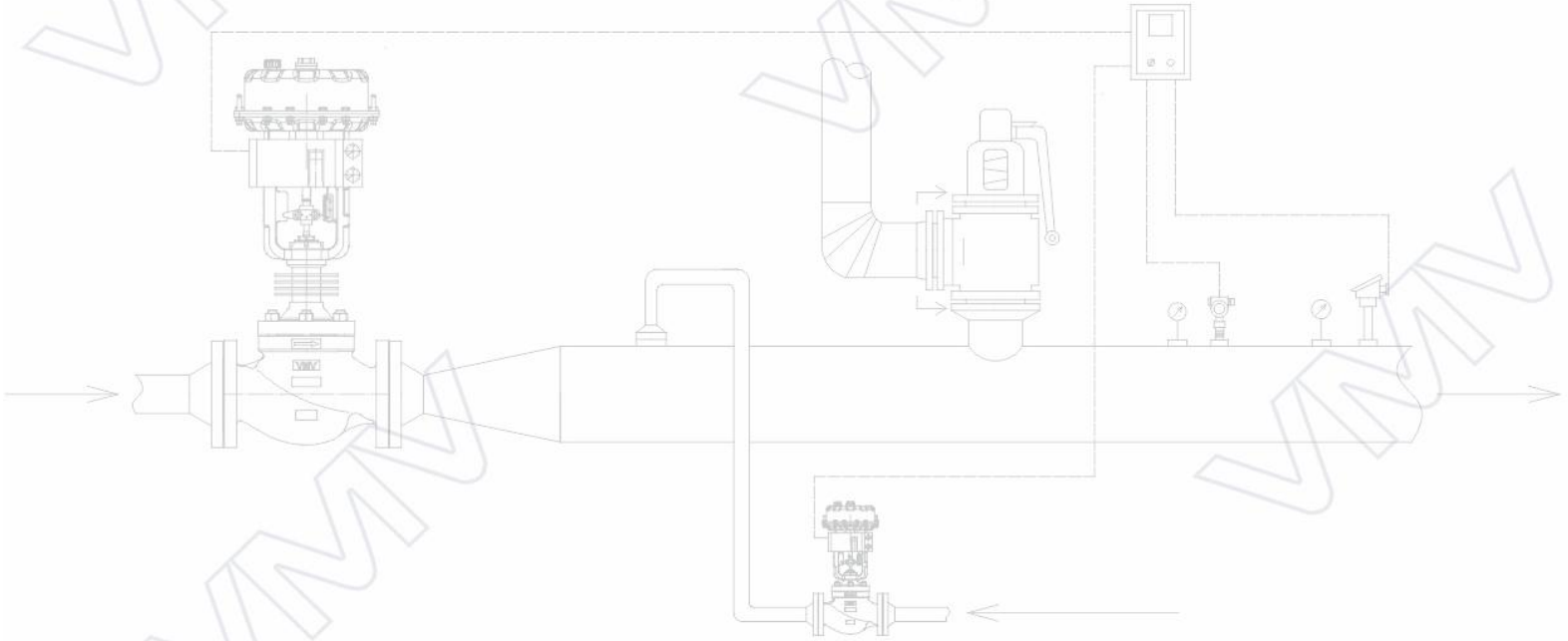
VMV®



CONTROL VALVES SERIES

V8000 Series Control Valve

V8000 SERIES
CONTROL VALVE

V8000 SERIES CONTROL VALVE

1. Product Introduction

In the fields of heating, temperature control, refrigeration, and even the entire field of industrial fluid automation, GlOBE straight-Travel control valve is a common and indispensable fluid control component. The control valve achieves the regulation of steam and other fluids' pressure, flow rate, temperature and fluid level, which mainly through changing the throttling area between the valve plug and valve seat. Common issues with regular GLOBE straight-Travel control valves include difficulty in disassembling and replacing valve seats, packing wear and leakage, poor regulating accuracy, weak sealing, especially in high temperature conditions where it is prone to stick, excessive vibration and noise, stem breakage or detachment, and large leakage, which cannot meet operational requirements, lead to emergency shutdowns in severe cases, resulting in substantial losses for users.

2. Product advantages

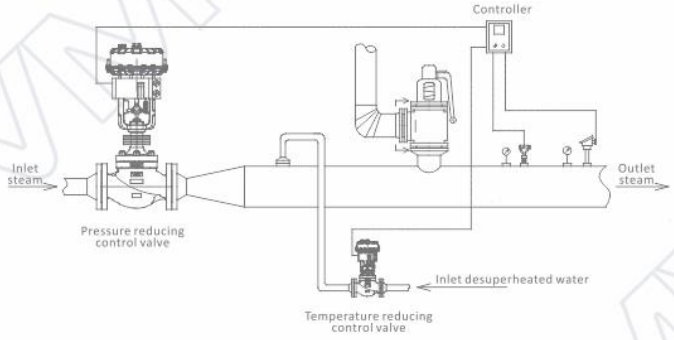
The V8000 model solves the above problems well and owns the following features:

- Good stability against high differential pressure
- Long-lasting seals in high-temperature operations
- High regulation precision with low leakage
- Long service life of packing
- Convenient and quick on-site valve maintenance
- Fast response speed

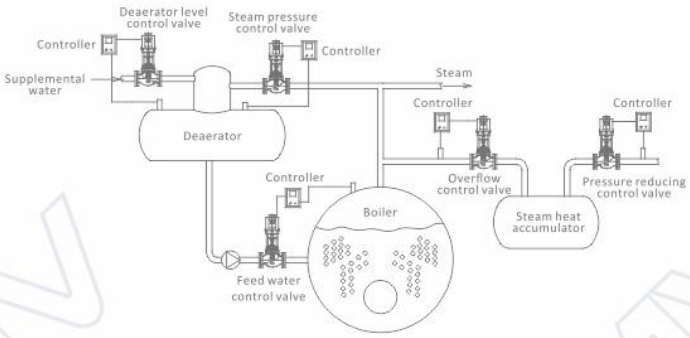
VMV equipped with either pneumatic diaphragm actuator or electric actuator according to the user's on-site energy.

3. Typical Application Scenarios

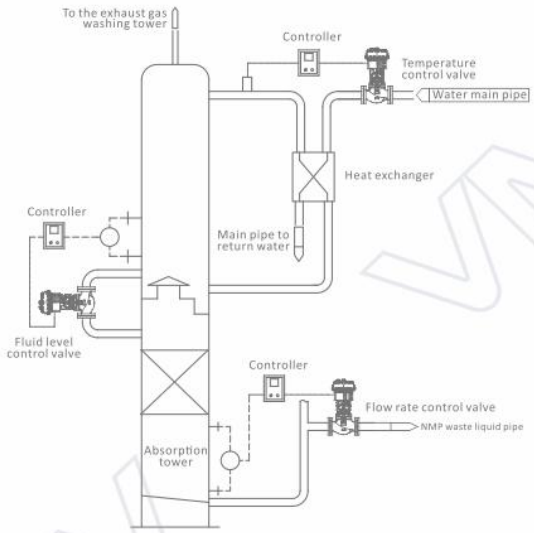
3.1 Control valve of steam pressure reducing and temperature reducing on steam pipelines.



3.2 Control valve of feed water, deaerator fluid level, steam pressure, steam overflow, and steam pressure reducing is used in conjunction with boiler.



3.3 Absorption tower in the NMP recovery system for control valve of fluid level, water-added temperature, NMP and water mixture outlet flow rate.



4.Technical Parameters

Nominal diameter	DN15(NPS1/2) ~ DN500
Pressure rating	PN16 ~ PN420、Class150 ~ Class2500
Operating voltage (electric actuator)	220VAC, 380VAC, 24VDC
Air supply pressure (pneumatic actuator)	0.4 ~ 0.6MPa
Operating temperature	-45 ~ 588 ℃
Bonnet type	Standard type (-17 ~ 300℃) Radiator fin type(-45℃ ~ -17℃, > 300℃)
Packing	V-type combination packing(≤200℃) Graphite combination packing(＞200℃)

5. Performance

Rated Cv value	See table below
Flow characteristic	Equal percentage, linear, quick opening
Regulating	50:1
Leakage level	Level IV (metal hard seal) Level V (metal hard seal) Level VI (soft seal)
Hysteresis	<1%
Dead zone	<0.6%
Allowable differential pressure	See table below

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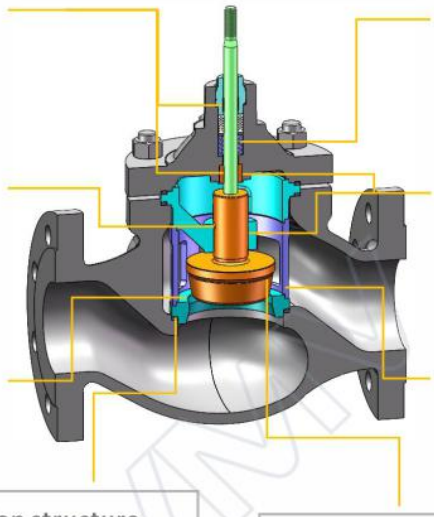
6. Structure and characteristics

6.1 Single-seat control valve

Valve stem double guided structure
Keeping the packing and valve stem coaxial at any times can prevent abnormal wear of the packing caused by eccentricity,greatly improving the service life of the packing.

Thread + pin connection structure
The valve plug and the valve stem is tightly connected by threads and pins, with no any relative movement gap, effectively prevent fatigue and fracture of the valve stem from relative swing of the valve plug and valve stem.

Up-pressure valve seat structure
By loosening the valve bonnet bolts, the internal components of the valve can be removed one by one, allowing for quick maintenance and components on-site, thus saving the user's replacement of the valve seat and internal maintenance time



Spring-loaded packing gland structure
Provide a continuous and stable compressive force for the packing, allowing the packing to automatically compensate for wear during use, achieving long-term stable sealing.

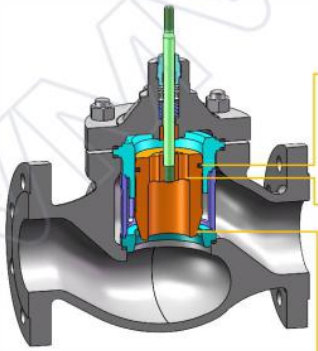
Valve plug double-guided structure
The valve plug operates smoothly, not prone to vibriaon and sticking, ensuring higher regulating precision.

Elastic pressure cage compensation structure
Under high-temperature conditions, the pressure cage can absorb the axial displacement caused by high temperatures and convert it into radial elastic deformation, prevent the gasket or valve internal components from failing due to thermal stress deformation.

Gasket quantitative compression structure
Prevent the gasket from being overly compressed to achieve durable sealing without external leakage.

Single seat sealing structure
Lower leakage and hard sealing can meet level V and above leakage requirements for a long time.

6.2 Balanced single-seat control valve

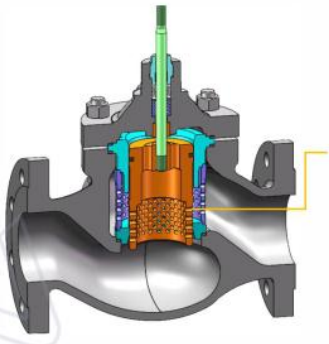


Wear-resistant piston ring seal structure
The wear-resistant piston ring still has self-lubricating at temperatures above 200°C, making the valve not easy to stretch and block during the long period regulating process, maintaining a seal grade above level IV .

Balanced single seat structure
Low thrust overcomes the large pressure difference, has better performance of overcoming differential pressure.

Spherical valve plug structure
The throttling orifice is uniformly distributed on the valve plug, allowing the medium to flow smoothly and stably, thus achieving higher regulating precision.

6.3 Low noise control valve

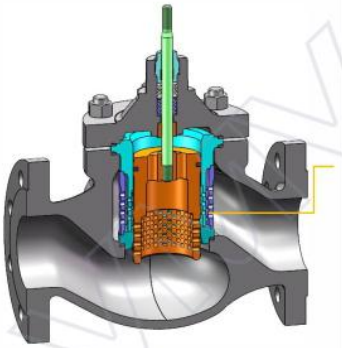


Low noise valve plug structure
This design reduces the flow speed of the medium, thus diminishing the erosion of the valve plug and seat caused by high flow speed, increasing its service life.

It also lowers noise, reducing environmental noise pollution.

Decreased vibrations, prevent damage to valve internal components from high-frequency vibrations, enhancing regulating precision and service life.

6.4 Multi-stage pressure reducing control valve



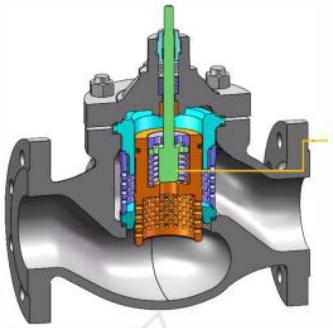
Multi-stage pressure +reducing valve plug structure

Used in conditions with high differential pressure to reduce medium flow speed and minimize the erosion to the valve plug and seat that occurs at high speed, thereby prolonging the valve's service life.

It also reduces noise, lessening noise pollution to the environment

The structure also diminishes vibrations, preventing damage to valve internal components due to high-frequency vibrations and improving the precision of regulation as well as service life.

6.5 Pilot control Valve



Pilot operated valve plug structure

Equipped with regulating and shut-off function, it has excellent sealing performance under high temperature (>230 ℃) working conditions and can ensure long -term operation with sealing above level V.

The structure also diminishes vibrations, preventing damage to valve components due to high-frequency vibrations and improving the precision of regulation as well as service life.

7. Common Material and Temperature Range of V8000 Series

7.1 Common valve trim materials

Body	Seat	Plug	Stem	Packing
JS1049	420+HT	420+HT	410	PTFE
WCB	304+STL	304+STL	630	Flexible graphite
LCB	304	304	XM-19	
WC6	316L+STL	316L+STL	304	
WC9	321+STL	321+STL	316L	
CF8	304+RPTFE	304+RPTFE		
CF3	316L+RPTFE	316L+RPTFE		
CF8M	F11+Q.STL	F11+Q.STL		
CF3M				

7.2 Temperature and pressure corresponding ranges of valve body material(MPa)

Temp℃	Class150					Class300					Class600				
	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M
-196~-30	-	-	-	1.90	1.90	-	-	-	4.96	4.96	-	-	-	9.93	9.93
-29~38	1.96	1.98	1.98	1.90	1.90	5.11	5.17	5.17	4.96	4.96	10.21	10.34	10.34	9.93	9.93
50	1.92	1.95	1.95	1.83	1.84	5.01	5.17	5.17	4.81	4.81	10.2	10.34	10.34	9.56	9.62
100	1.77	1.77	1.77	1.57	1.62	4.66	5.15	5.15	4.22	4.22	9.32	10.3	10.3	8.17	8.44
150	1.58	1.58	1.58	1.42	1.48	4.51	4.97	5.03	3.85	3.85	9.02	9.95	10.03	7.4	7.7
200	1.38	1.38	1.38	1.32	1.37	4.38	4.80	4.86	3.57	3.57	8.76	9.59	9.72	6.9	7.13
250	1.21	1.21	1.21	1.21	1.21	4.19	4.63	4.63	3.34	3.34	8.39	9.27	9.27	6.5	6.68
300	1.02	1.02	1.02	1.02	1.02	3.98	4.29	4.29	3.16	3.16	7.96	8.57	8.57	6.18	6.32
325	0.93	0.93	0.93	0.93	0.93	3.87	4.14	4.14	3.09	3.09	7.74	8.26	8.26	6.04	6.18
350	0.84	0.84	0.84	0.84	0.84	3.76	4.03	4.03	3.03	3.03	7.51	8.04	8.04	5.93	6.07

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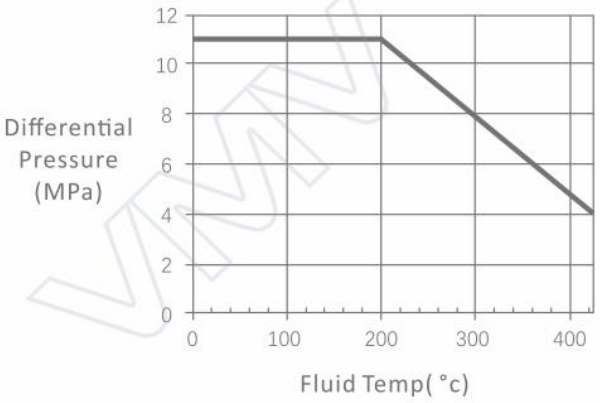
375	0.74	0.74	0.74	0.74	0.74	3.64	3.89	3.89	2.99	2.99	7.27	7.26	7.76	5.81	5.98
400	0.65	0.65	0.65	0.65	0.65	3.47	3.65	3.65	2.94	2.94	6.94	7.33	7.33	5.69	5.89
425	0.55	0.55	0.55	0.55	0.55	2.88	3.52	3.52	2.91	2.91	5.75	7.00	7.00	5.6	5.83
450	-	0.46	0.46	0.46	0.46	-	3.37	3.37	2.88	2.88	-	6.77	6.77	5.48	5.77
475	-	0.37	0.37	0.37	0.37	-	3.17	3.17	2.87	2.87	-	6.34	6.34	5.39	5.73
500	-	0.28	0.28	0.28	0.28	-	2.57	2.82	2.82	2.82	-	5.15	5.65	5.3	5.65
538	-	0.14	0.14	0.14	0.14	-	1.49	1.84	2.52	2.52	-	2.98	3.69	4.89	5.00
550	-	-	-	-	-	-	1.27	1.56	-	-	-	2.54	3.13	-	-
575	-	-	-	-	-	-	0.88	1.05	-	-	-	1.76	2.11	-	-
600	-	-	-	-	-	-	0.61	0.69	-	-	-	1.22	1.38	-	-

Temp℃	PN16					PN25					PN40				
	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M
-196~-30	-	-	-	1.57	1.57	-	-	-	2.45	2.45	-	-	-	3.92	3.92
-29~38	1.61	1.63	1.63	1.57	1.57	2.52	2.55	2.55	2.45	2.45	4.03	4.08	4.08	3.92	3.92
50	1.58	1.63	1.63	1.51	1.52	2.47	2.55	2.55	2.36	2.37	3.95	4.08	4.08	3.78	3.8
100	1.46	1.63	1.63	1.29	1.33	2.29	2.54	2.54	2.02	2.08	3.66	4.06	4.07	3.23	3.33
150	1.43	1.57	1.58	1.17	1.22	2.23	2.45	2.48	1.83	1.9	3.57	3.93	3.96	2.93	3.04
200	1.38	1.51	1.54	1.09	1.13	2.16	2.37	2.41	1.70	1.76	3.46	3.79	3.85	2.72	2.82
250	1.32	1.46	1.46	1.03	1.05	2.06	2.28	2.29	1.60	1.65	3.29	3.64	3.66	2.56	2.63
300	1.22	1.35	1.35	0.97	1.00	1.91	2.11	2.11	1.51	1.56	3.06	3.38	3.38	2.42	2.50
350	1.17	1.27	1.27	0.93	0.96	1.82	1.98	1.98	1.46	1.5	2.92	3.18	3.18	2.33	2.40
375	1.15	1.23	1.23	0.92	0.94	1.80	1.91	1.91	1.44	1.47	2.88	3.06	3.06	2.30	2.36
400	1.09	1.15	1.15	0.90	0.93	1.70	1.80	1.80	1.41	1.45	2.72	2.89	2.89	2.26	2.32
425	0.91	1.11	1.11	0.88	0.92	1.42	1.73	1.73	1.37	1.44	2.27	2.77	2.77	2.20	2.30
450	-	1.07	1.07	0.86	0.91	-	1.67	1.67	1.35	1.42	-	2.67	2.67	2.16	2.28
475	-	1.00	1.00	0.85	0.91	-	1.56	1.56	1.33	1.41	-	2.50	2.50	2.13	2.26
500	-	0.80	0.88	0.84	0.86	-	1.24	1.37	1.31	1.35	-	1.99	2.19	2.09	2.16
525	-	0.57	0.68	0.76	0.80	-	0.90	1.07	1.19	1.25	-	1.43	1.71	1.90	2.00
550	-	0.40	0.49	0.69	0.76	-	0.63	0.76	1.07	1.18	-	1.00	1.21	1.72	1.89
575	-	0.28	0.33	0.63	-	-	0.43	0.52	0.99	-	-	0.69	0.83	1.58	-
600	-	0.19	0.22	0.53	-	-	0.30	0.31	0.83	-	-	0.48	0.51	1.32	-

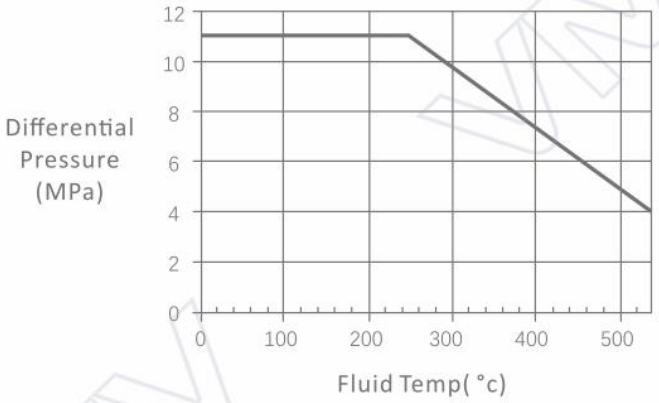
Temp℃	PN63					PN100				
	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M
-196~-30	-	-	-	6.17	6.17	-	-	-	9.8	9.8
-29~38	6.35	6.43	6.43	6.17	6.17	10.08	10.21	10.21	9.8	9.8
50	6.22	6.43	6.43	5.95	5.98	9.88	10.21	10.21	9.44	9.5
100	5.77	6.4	6.41	5.08	5.25	9.15	10.16	10.17	8.07	8.33
150	5.62	6.19	6.24	4.62	4.79	8.92	9.82	9.9	7.34	7.6
200	5.45	5.96	6.06	4.29	4.43	8.65	9.47	9.63	6.81	7.04
250	5.19	5.74	5.76	4.04	4.15	8.23	9.11	9.14	6.41	6.59
300	4.81	5.33	5.33	3.81	39.3	7.64	8.46	8.16	6.05	6.24
350	4.59	5.00	5.00	3.67	3.79	7.29	7.94	7.94	5.83	6.01
375	4.53	4.82	4.82	3.63	3.72	7.2	7.66	7.66	5.76	5.90

7.3 The valve trim material corresponds to the temperature and pressure range

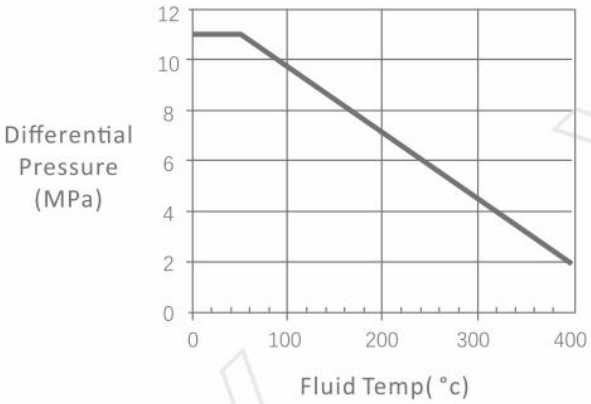
① Valve plug (valve seat) material: 420+HT



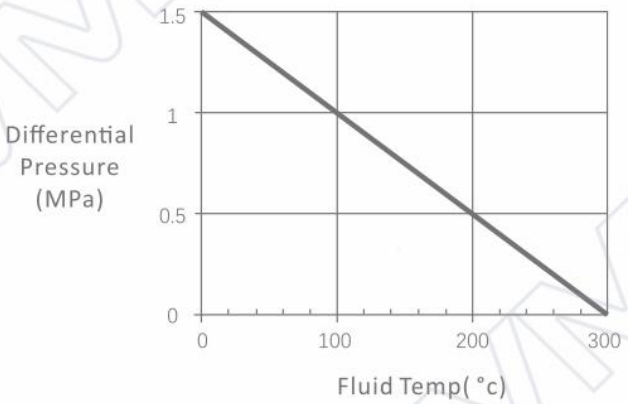
② Valve plug (valve seat) material: F11+Q.STL



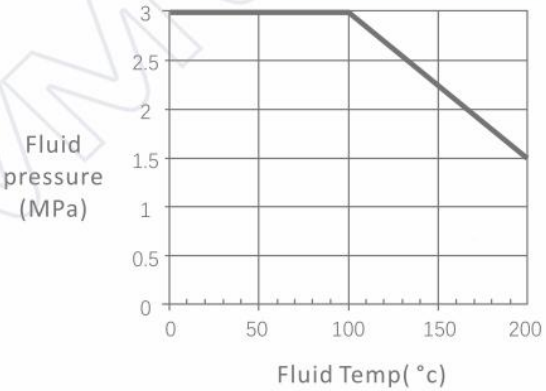
③ Valve plug (valve seat) material: 304+STL/316L+STL



④ Valve plug (valve seat) material: 304/316L



⑤ Valve plug material: 304+RPTFE/316L+RPTFE



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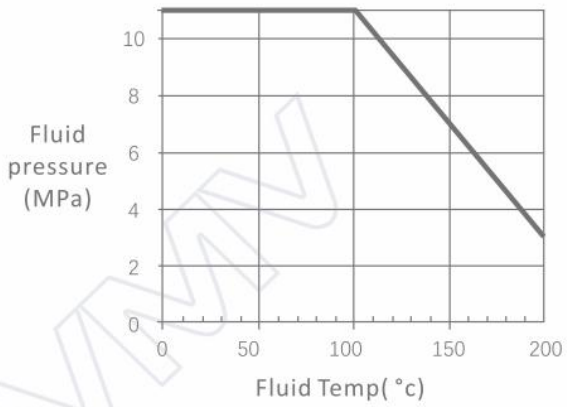
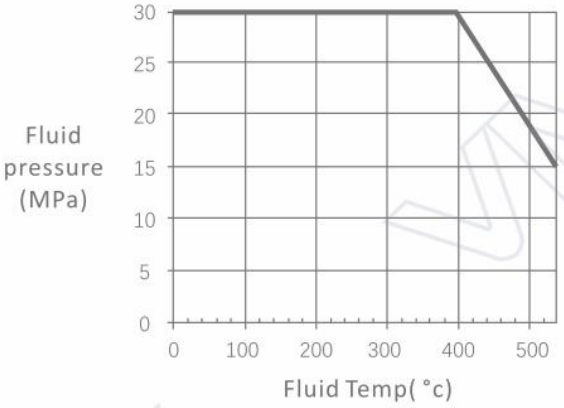
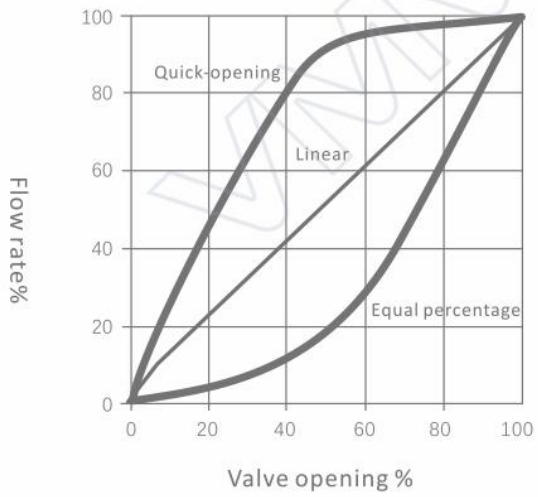
⑥ Packing material: PTFE



⑦ Packing material: graphite



8.Typical Flow Characteristic Curve



9. Rated Cv and Travel

Nominal diameter	Travel	Valve seat diameter code	Rated CV			
			Linear	Equal percentage	Low noise correction linearity	Low noise correction linearity equal percentage
-	16	6E	0.002	-	-	-
-	16	6D	0.005	-	-	-
-	16	6C	0.008	-	-	-
-	16	6B	0.01	-	-	-
-	16	6A	0.08	-	-	-
-	16	6	0.12	0.12	-	-
-	16	7	0.23	0.23	-	-
-	16	8	0.58	0.58	-	-

-	16	10	1.2	1.2	-	-
-	16	12	1.9	1.9	-	-
-	16	14	2.9	2.9	-	-
DN15	16	15	4.7	4.7	-	-
-	16	18	7.4	7.4	-	-
DN20	16	20	10	10	-	-
DN25	16	25	14	14	7	6
DN32	20	32	24	24	14	9
DN40	20	40	30	30	22	17
DN50	20	50	48	45	41	31
DN65	30	65	74	74	61	41
DN80	30	80	117	117	99	63
DN100	30	100	187	187	135	99
DN125	60	125	320	287	261	171
DN150	60	150	456	433	342	243
DN200	60	200	749	678	567	401
DN250	100	250	1100	950	842	639
DN300	100	300	1600	1400	1224	945
DN350	130	350	2100	1900	1607	1283
DN400	130	400	2800	2600	2142	1755

10. Maximum Closing Differential Pressure (MPa)

Nominal diameter	Actuator model	PN < 10MPa (metal seal level IV)			
		PTFE packing		Graphite packing	
		Unbalanced single seat structure	Balanced single seat structure	Unbalanced single seat structure	Balanced single seat structure
DN20	Mt1	4.3	-	1.9	-
DN25	MT1	3.6	-	1.6	-
DN32	MT1	1.9	6	0.9	2.2
DN40	MT1	1.3	6	0.7	2.2
DN50	MT1	0.8	6	0.4	2.2
DN65	MT2	1.2	8.7	1.1	5
DN80	MT2	0.8	8.7	0.7	6.5
DN100	MT2	0.5	6.8	0.4	5
DN125	MT3	0.7	10	0.2	9.2
DN150	MT3	0.5	9.8	-	7.7
DN200	MT3	-	6	-	4.6
DN250	MT4	-	7.2	-	5.6
DN300	Mt4	-	5.7	-	4.5

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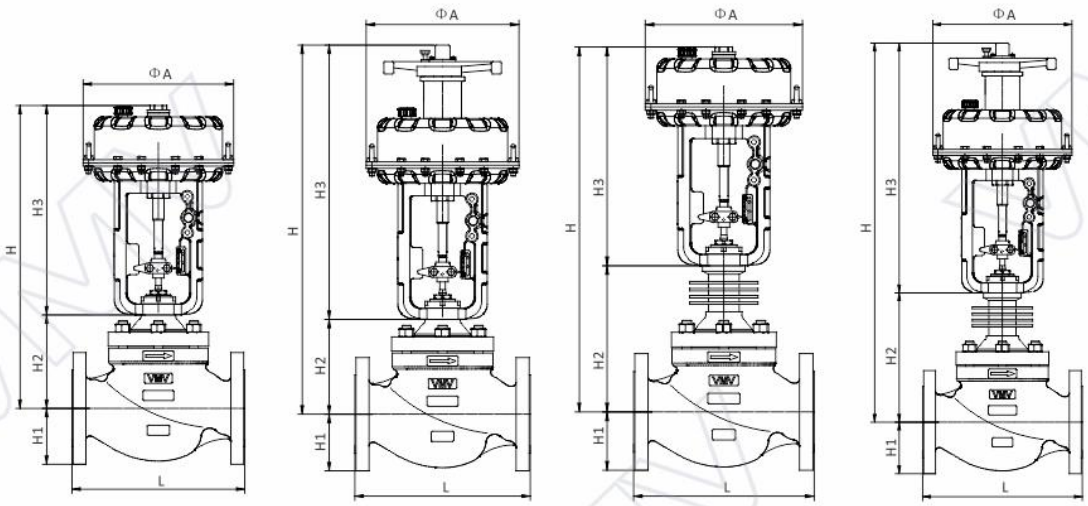
11. Dimensions and Weight



11.1 Overall dimensions (mm)

Nominal diameter	Actuator model	L						H1	H2		H3		ΦA
		PN16	PN25	PN40	CLASS 150	CLASS 300	PN63 PN100 CLASS600		Standard type bonnet	Radiator fin type bonnet	Without handwheel	With handwheel	
DN15	MT1	130	130	130	-	-	-	75	130	285	300	450	180
DN20	MT1	150	150	150	184	194	206	75	130	285	300	450	180
DN25	MT1	160	160	160	184	197	210	75	130	285	300	450	180
DN32	MT1	180	180	180	180	222	251	90	140	290	300	450	180
DN40	MT1	200	200	200	222	235	251	90	140	290	300	450	180
DN50	MT1	230	230	230	254	267	286	105	180	330	300	450	180
DN65	MT2	290	290	290	276	292	311	115	196	346	398	651	270
DN80	MT2	310	310	310	298	318	337	120	196	346	398	651	270
DN100	MT2	350	350	350	352	368	394	145	221	371	398	651	270
DN125	MT3	400	400	400	403	425	457	189	260	460	610	950	400
DN150	MT3	480	480	480	451	473	508	189	260	460	610	950	400
DN200	MT3	600	600	568	600	568	610	239	292	492	610	950	400
DN250	MT4	730	730	708	730	708	752	305	357	607	1100	1700	620
DN300	MT4	850	850	775	850	775	819	335	394	644	1100	1700	620

11.2 Weight (kg)

Nominal Diameter	Actuator model	Weight			
		PN≤5MPa		PN≤1OMPa	
		Without handwheel	With handwheel	Without handwheel	With handwheel
DN15	MT1	17	24	20	27
DN20	MT1	17	24	20	27
DN25	MT1	17	24	20	27
DN32	MT1	33	40	41	48
DN40	MT1	34	41	42	49
DN50	MT1	35	42	43	50
DN65	MT2	65	75	79	89
DN80	MT2	67	77	82	92
DN100	MT2	86	96	106	116
DN125	MT3	171	190	209	228
DN150	MT3	202	221	249	268
DN200	MT3	285	304	357	376
DN250	MT4	531	566	662	697
DN300	MT4	703	738	885	920

12. Valve Body Casting Material Comparison Table

ASTM	DIN	EN	JIS
A216 WCB	1.0619	GS-C25	G5151 SCPH2
A536 60-40-80	JS1049	GGG40	G5502 FCD400-15
A352 LCB	1.1131	G17Mn5	G5152 SCPL1
A217 WC6	1.7357	G17CrMo5-5	G5151 SCPH21
A217 WC9	1.7379	G17CrMo9-10	G5151 SCPH-32
A351 CF8	1.4308	GX5CrNi19-10	G5151 SCS13A
A351 CF3	1.4309	GX2CrNi19-11	G5151 SCS19A
A351 CF8M	1.4408	GX5CrNiMo19-11-2	G5151 SCS14A
A351 CF3M	1.4409	GX2CrNiMo19-11-2	G5151 SCS16A
A351 CF8C	1.4552	GX5CrNiNb19-11	G5151 SCS21

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